

**"A METHOD OF AND COMPOSITION FOR  
PREVENTING TISSUE DAMAGE"**

**WE CLAIM:**

1. A method of protecting tissue and preventing tissue damage in surgery comprising providing surfaces involved in said surgery with a wet coating of a physiologically acceptable aqueous solution of a hydrophilic, polymeric material prior to manipulation of said tissue during said surgery, wherein:

A) said polymeric material is a water-soluble, biocompatible, pharmaceutically acceptable polypeptide, polysaccharide, excluding hyaluronic acid having a molecular weight above about 1,500,000, synthetic polymer, salt, complex or mixture thereof; and

B) said polymeric material has a molecular weight of about 50,000 D or above, and the concentration in said aqueous solution of said polymer is in the range of from about 0.01% to about 15% by weight, said molecular weight and concentration having values such that said aqueous solution is capable of providing wet coatings on said surfaces involved in said surgery.

1           2.    The method of claim 1 wherein said polymeric  
2 material is carboxymethylcellulose, PVP, hyaluronic acid,  
3 pharmaceutically acceptable salts or complexes thereof or  
4 mixtures thereof.

1           3.    The method of claim 2 wherein said polymeric  
2 material is carboxymethylcellulose or a pharmaceutically  
3 acceptable salt or complex thereof.

1           4.    The method of claim 2 wherein said polymeric  
2 material is PVP or a pharmaceutically acceptable salt or  
3 complex thereof.

1           5.    The method of claim 2 wherein said polymeric  
2 material is hyaluronic acid or a pharmaceutically acceptable  
3 salt or complex thereof.

1           6.    The method of claim 1 wherein said surgery is  
2 abdominal, peritoneal, pericardial, obstetric, gynecological,  
3 neurosurgical, arthroscopic, laparoscopic, endoscopic,  
4 orthopedic, plastic, reconstructive, prosthetic,  
5 ENT, dental, muscle or tendon.

1           7.    The method of claim 1 wherein said involved  
2 surfaces coated with said solution of polymeric material  
3 comprise tissue or surgical article surfaces or both.

1           8.    A method of protecting tissue and preventing  
2 tissue damage in surgery comprising providing surfaces  
3 involved in said surgery with a wet coating of a physio-  
4 logically acceptable aqueous solution of a hydrophilic,  
5 polymeric material prior to manipulation of said tissue  
6 during said surgery, wherein:

7                   A)    said polymeric material is a water-  
8 soluble, biocompatible, pharmaceutically accept-  
9 able hyaluronic acid having a molecular weight  
10 above about 1,500,000, salt, complex or mixture  
11 thereof; and

12                   B)    the concentration in said aqueous solu-  
13 tion of said hyaluronic acid, salt or complex is  
14 in the range of from about 0.01% to less than  
15 about 1% by weight, said molecular weight and  
16 concentration having values such that said aqueous  
17 solution is capable of providing wet coatings on  
18 said surfaces involved in said surgery.

1           9.    The method of claim 8 wherein said surgery is  
2 abdominal, peritoneal, pericardial, obstetric, gyneco-  
3 logical, neurosurgical, arthroscopic, laparoscopic, endo-  
4 scopic, orthopedic, plastic, reconstructive, prosthetic,  
5 ENT, dental, muscle or tendon.

1           10.    The method of claim 8 wherein said involved  
2 surfaces coated with said solution of polymeric material  
3 comprise tissue or surgical article surfaces or both.

1           11.    A surgical article having surfaces adapted  
2 for contacting tissue surfaces during surgery, said surfaces  
3 of said surgical article having a wet coating thereon, said  
4 wet coating comprising a physiologically acceptable aqueous  
5 solution of a hydrophilic, polymeric material wherein:

6                   A)    said polymeric material is a water-  
7 soluble, biocompatible, pharmaceutically accept-  
8 able polypeptide, polysaccharide, excluding  
9 hyaluronic acid having a molecular weight above  
10 about 1,500,000, synthetic polymer, salt, complex  
11 or mixture thereof; and

12                   B)    a molecular weight of about 50,000 D or  
13 above, and the concentration in said aqueous solu-  
14 tion of said polymer is in the range of from about  
15 0.01% to about 15% by weight, said molecular  
16 weight and concentration having values such that  
17 said aqueous solution is capable of providing wet  
18 coatings on said surfaces; or  
19 a physiologically acceptable aqueous solution of a hydro-  
20 philic, polymeric material, wherein:

I) said polymeric material is a water-soluble, biocompatible, pharmaceutically acceptable hyaluronic acid having a molecular weight above about 1,500,000, salt, complex or mixture thereof; and

II) the concentration in said aqueous solution of said hyaluronic acid, salt or complex is in the range of from about 0.01% to less than about 1% by weight, said molecular weight and concentration having values such that said aqueous solution is capable of providing wet coatings on said surfaces.

12. A method of protecting from damage tissues or organs during harvesting thereof from animals or humans, manufacture therefrom of bioprostheses and subsequent manipulations and implantations of said bioprostheses in animals or humans, comprising providing said tissue or organ surfaces with a wet coating of a physiologically acceptable aqueous solution of a hydrophilic, polymeric material prior to and during said harvesting, manufacture of bioprostheses, manipulations and implantations thereof, wherein:

10           A)    said polymeric material is a water-  
11           soluble, biocompatible, pharmaceutically accept-  
12           able polypeptide, polysaccharide, excluding  
13           hyaluronic acid having a molecular weight above  
14           about 1,500,000, synthetic polymer, salt, complex  
15           or mixture thereof; and

16           B)    said polymeric material has a molecular  
17           weight of about 50,000 D or above, and the concen-  
18           tration in said aqueous solution of said polymer  
19           is in the range of from about 0.01% to about 15%  
20           by weight, said molecular weight and concentration  
21           having values such that said aqueous solution is  
22           capable of providing wet coatings on said sur-  
23           faces.

1           13.    A bioprosthesis comprised at least in part of  
2           tissue or an organ or part thereof of an animal or human,  
3           said tissue or organ or part thereof having a coating  
4           thereon of a physiologically acceptable aqueous solution of  
5           a hydrophilic, polymer material to protect said tissue or  
6           organ or part thereof from damage arising during harvesting  
7           thereof from said animal or human, manufacture of said  
8           bioprosthesis and manipulations and implantations of said  
9           bioprosthesis in animals or humans, wherein:

10           A)    said polymeric material is a water-  
11           soluble, biocompatible, pharmaceutically accept-  
12           able polypeptide, polysaccharide, excluding  
13           hyaluronic acid having a molecular weight above  
14           about 1,500,000, synthetic polymer, salt, complex  
15           or mixture thereof; and

16           B)    said polymeric material has a molecular  
17           weight of about 50,000 D or above, and the concen-  
18           tration in said aqueous solution of said polymer  
19           is in the range of from about 0.01% to about 15%  
20           by weight, said molecular weight and concentration  
21           having values such that said aqueous solution is  
22           capable of providing wet coatings on said sur-  
23           faces.

1           14.    A method of protecting from damage tissues or  
2           organs or parts thereof during harvesting thereof from  
3           animals or humans, subsequent manipulations and implanta-  
4           tions of said tissues or organs or parts thereof in animals  
5           or humans, comprising providing said tissue and organ sur-  
6           faces with a wet coating of a physiologically acceptable  
7           aqueous solution of a hydrophilic, polymeric material prior  
8           to and during said harvesting, manipulations and implanta-  
9           tions thereof, wherein:

10           A)    said polymeric material is a water-  
11           soluble, biocompatible, pharmaceutically accept-  
12           able polypeptide, polysaccharide, excluding  
13           hyaluronic acid having a molecular weight above  
14           about 1,500,000, synthetic polymer, salt, complex  
15           or mixture thereof; and

16           B)    said polymeric material has a molecular  
17           weight of about 50,000 D or above, and the concen-  
18           tration in said aqueous solution of said polymer  
19           is in the range of from about 0.01% to about 15%  
20           by weight, said molecular weight and concentration  
21           having values such that said aqueous solution is  
22           capable of providing wet coatings on said sur-  
23           faces.